

**CLAIMS**

1. A method for detecting and monitoring wafer probe stability including the steps of:

- 5 probing each die on a wafer;  
for each die determining whether the result of the probe is a pass or a fail;  
if the result of a probe is a fail, re-probing the die and determining whether the re-probe is a pass or a fail;  
once all the dies have been probed determining the rate of die re-probes that lead  
10 to passes;  
comparing the rate of passes on re-probes to a pre-determined limit; and  
if the rate of passes on re-probes is greater than the predetermined limit,  
assigning the probe status as unstable.

15 2. A method for detecting and monitoring wafer probe stability as claimed in claim 1 wherein the step of assigning the probe status as unstable includes setting a flag on the monitoring device.

20 3. A method for detecting and monitoring wafer probe stability as claimed in claim 2 wherein the step of assigning the probe status to unstable further includes sounding an alarm and/or providing an indicator on a monitor.

25 4. A method for detecting and monitoring wafer probe stability as claimed in claim 2 or claim 3 wherein the step of assigning the probe status to unstable further includes disabling the probe equipment.

5. A method for detecting and monitoring wafer probe stability as claimed in any one of claims 1 to 4 wherein the step of re-probing any die that fails on the first probe is performed a predetermined number of times.

30 6. A method for detecting and monitoring wafer probe stability as claimed in claim 5 wherein re-probing is performed only once for each die that fails on the first probe.

7. A method for detecting and monitoring wafer probe stability as claimed in claim 5 wherein the step of re-probing may be performed more than once.

8. A method for detecting and monitoring wafer probe stability as claimed in any 5 one of claims 1 to 7 further including the step of creating a probe reference file for each wafer.

9. A method for detecting and monitoring wafer probe stability as claimed in claim 8 wherein the probe reference file contains a re-probe limit, re-probe recovery rate 10 information, a bin re-probe limit, a sensitivity limit and the recovery rate for re-probing.

10. A method for detecting and monitoring wafer probe stability as claimed in claim 9 wherein the re-probe recovery rate information includes a limit value.

15 11. A method for detecting and monitoring wafer probe stability as claimed in claim 10 wherein for wafers with more than a few hundred dice the limit is 2%.

12. A method for detecting and monitoring wafer probe stability as claimed in claim 10 wherein the re-probe rate recovery limit is set as three times the standard deviation of 20 the re-probe recovery rate from previously supplied data.

13. A method for detecting and monitoring wafer probe stability as claimed in claim 9 wherein the sensitivity limit includes data on the number of sensitive dies expected in a wafer.

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14. A method for detecting and monitoring wafer probe stability as claimed in claim 9 wherein the recovery rate for re-probing is determined as:

(number of recover from fail to good – recovery from sensitivity limit to good)

(total number of tested good die)

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15. A method for detecting and monitoring wafer probe stability as claimed in any one of claims 1 to 14 wherein the method further includes the step of generating a report from the probe reference file for each completed wafer test.

5 16. A method for detecting and monitoring wafer probe stability as claimed in claim 15 wherein the report includes device identification information and fail to good probe information.

10 17. A system for detecting and monitoring wafer probe stability including the system arranged to:

probe each die on a wafer;  
for each die determine whether the result of the probe is a pass or a fail;  
if the result of a probe is a fail, re-probe the die and determine whether the re-probe is a pass or a fail;  
once all the dies have been probed determine the rate of die re-probes that lead to passes;  
compare the rate of passes on re-probes to a pre-determined limit; and  
if the rate of passes on re-probes is greater than the predetermined limit, assign the probe status as unstable.